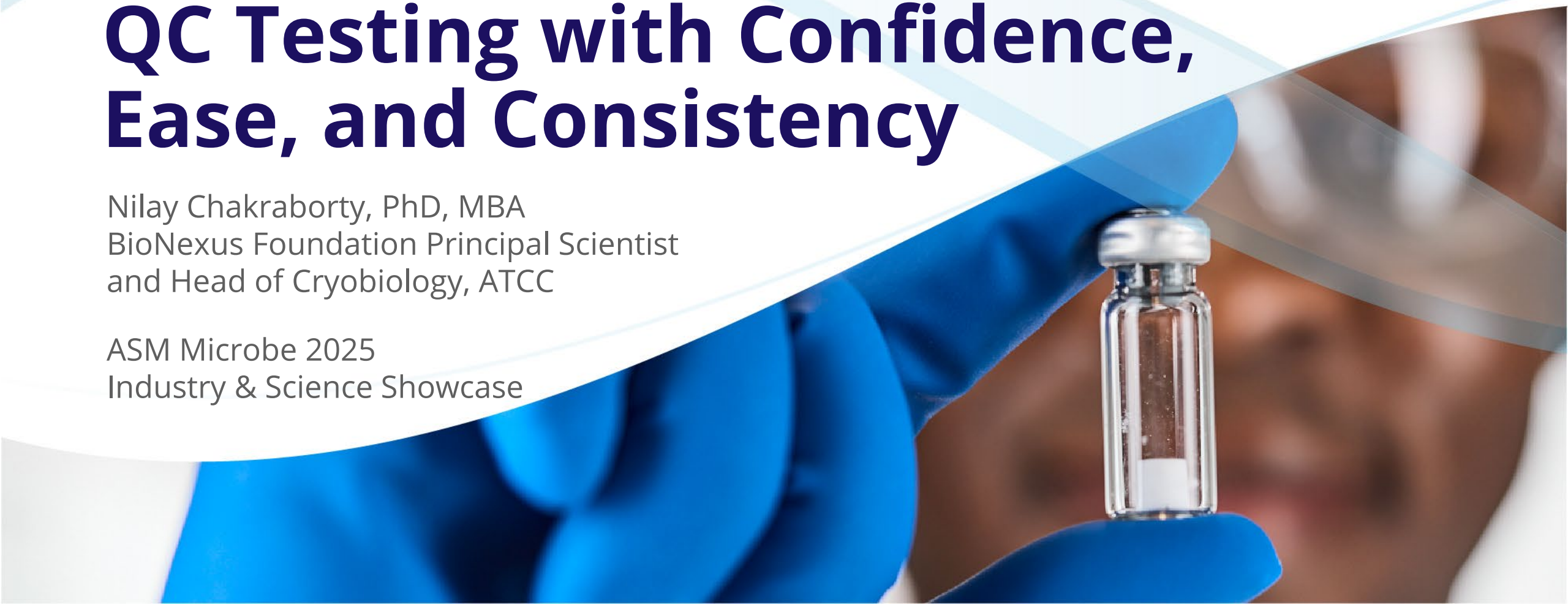
Streamline Your Microbial QC Testing with Confidence, Ease, and Consistency

Nilay Chakraborty, PhD, MBA
BioNexus Foundation Principal Scientist
and Head of Cryobiology, ATCC

ASM Microbe 2025
Industry & Science Showcase



About ATCC

- Founded in 1925, ATCC® is a non-profit organization with HQ in Manassas, VA, and an R&D and Services center in Gaithersburg, MD
- World's premier biological materials resource and standards development organization
- 5,000 cell lines
- 80,000 microorganisms
- Genomic & synthetic nucleic acids
- Media/reagents

- ATCC® collaborates with and supports the scientific community with industry-standard biological products and innovative solutions
- Growing portfolio of products and services
- Sales and distribution in 150 countries, 20 international distributors
- Talented team of 600+ employees, over one-third with advanced degrees

bsi. ISO 9001 Quality Management

bsi. ISO 13485 Medical Devices Quality Management

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

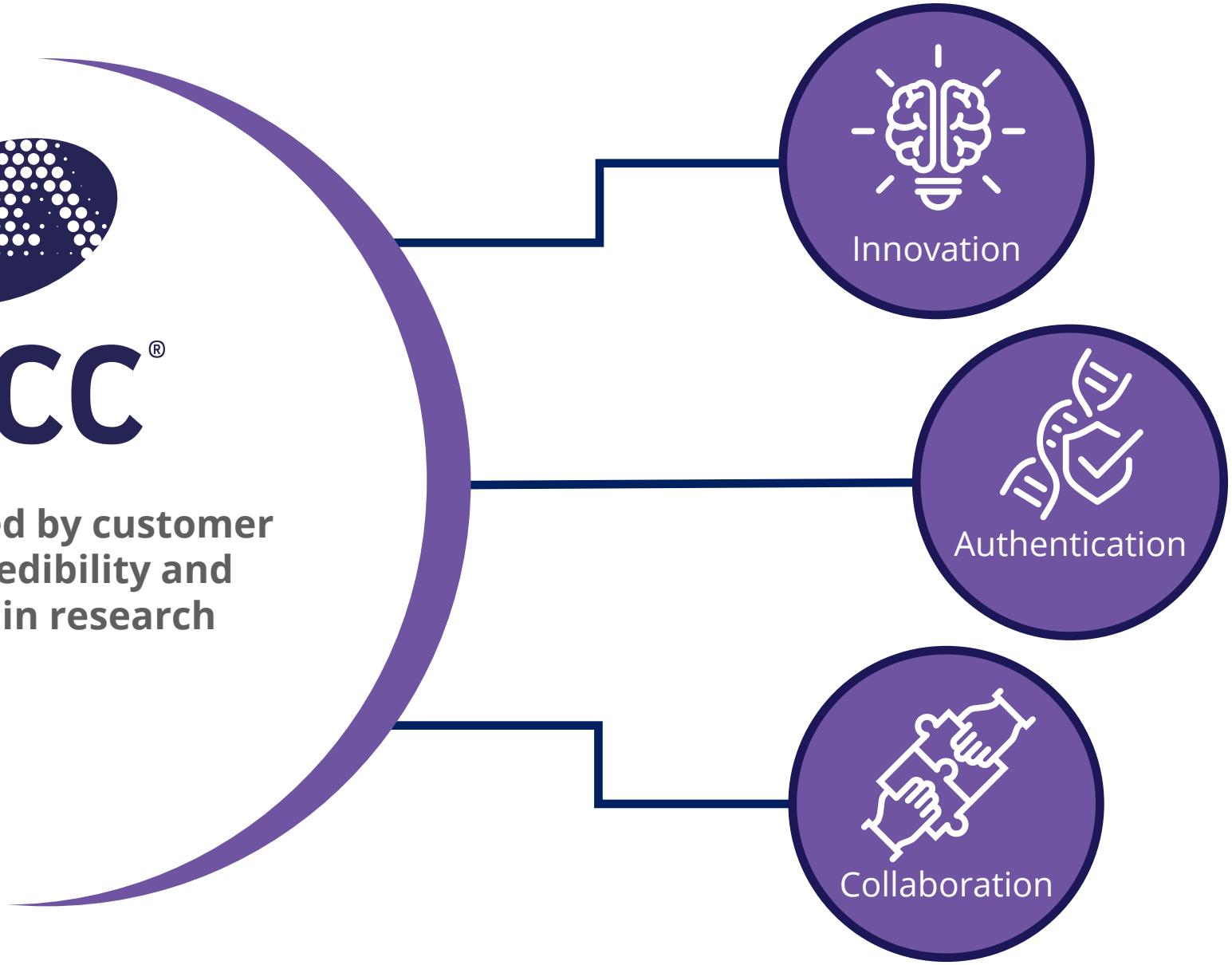
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

Enabling scientific progress for nearly 100 years

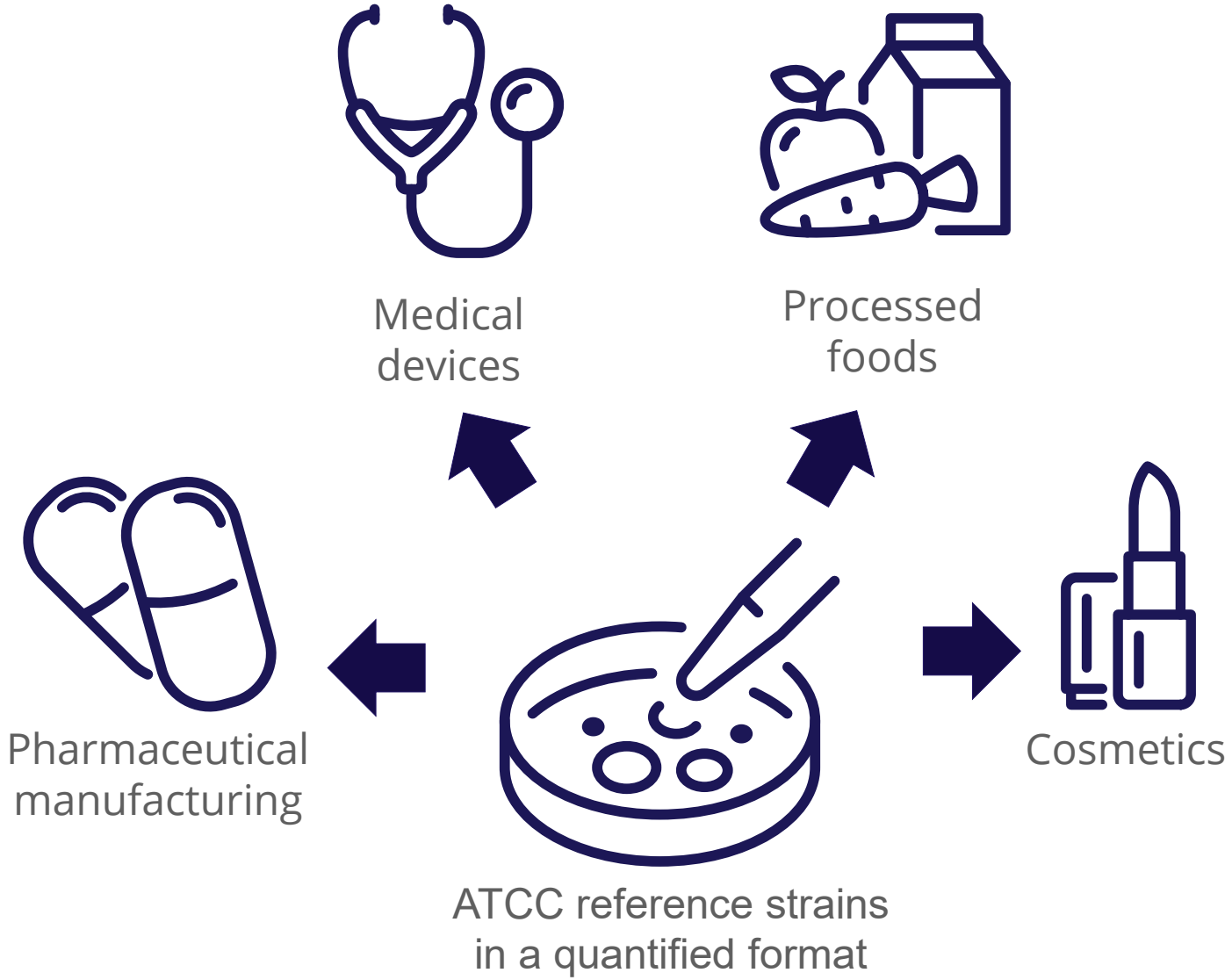
ATCC®

ATCC®

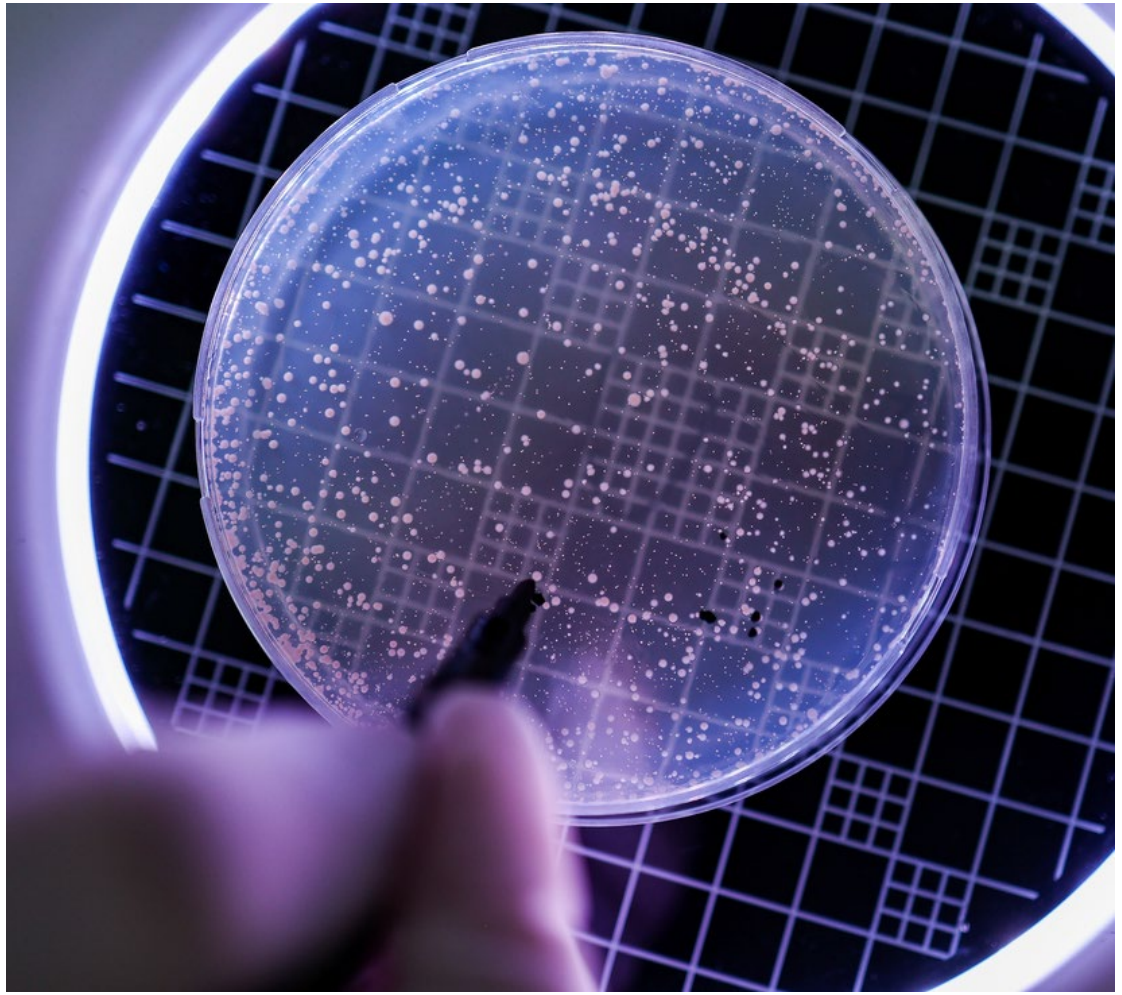
We are inspired by customer needs for credibility and efficiencies in research



Microbial QC testing applications



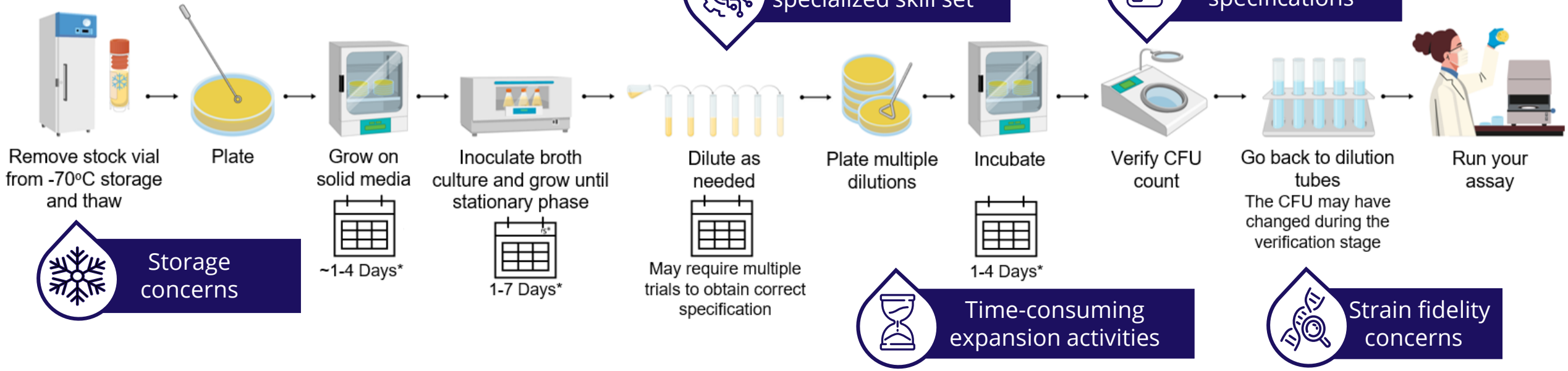
Pharmacopeias govern microbial QC testing



- Define standardized methods for microbial testing in pharmaceuticals and other regulated industries
- Ensure product safety, consistency, and regulatory compliance
- Provide for validated assays and acceptance criteria for microbial limits and preservative efficacy
- Used globally to guide assay development, assay validation, and routine quality controls

Challenges when using microbial reference strains

The traditional microbe culture workflow



*Different species require varying incubation times

Challenges using single-use microbial reference strains

Features	Company A	Company B	Company C	Company D
Processing time ~1 minute			✓	✓
2-8°C refrigeration storage	✓	✓		
Manufactured under ISO 17034	✓	✓	✓	✓
Includes all strains for USP <51> (High CFU format)	✓		✓	✓
Includes all strains for USP <61> (Low CFU format)	✓	✓	✓	✓
Product kit includes rehydration buffer	✓	✓	✓	
Sourced from ATCC	✓	✓		
Provided as Passage 0 strain				

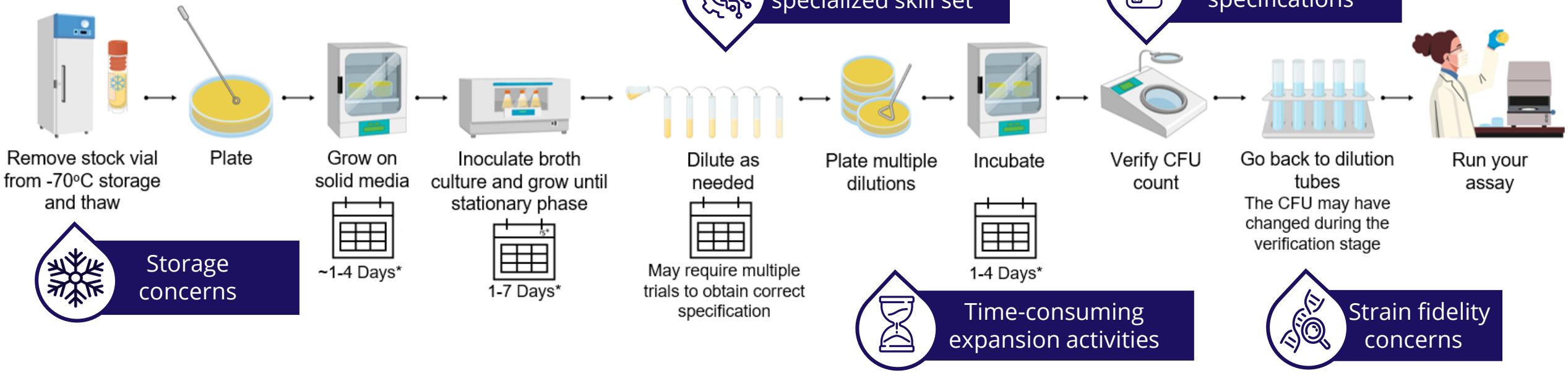
Challenges using single-use microbial reference strains

Features	MicroQuant™	Company A	Company B	Company C	Company D
Processing time ~1 minute	✓			✓	✓
2-8°C refrigeration storage	✓	✓	✓		
Manufactured under ISO 17034	✓	✓	✓	✓	✓
Includes all strains for USP <51> (High CFU format)	✓	✓		✓	✓
Includes all strains for USP <61> (Low CFU format)	✓	✓	✓	✓	✓
Product kit includes rehydration buffer	✓	✓	✓	✓	
Sourced from ATCC	✓	✓	✓		
Provided as Passage 0 strain	✓				


MicroQuant™
by ATCC®

Meeting the challenge through cryobiology

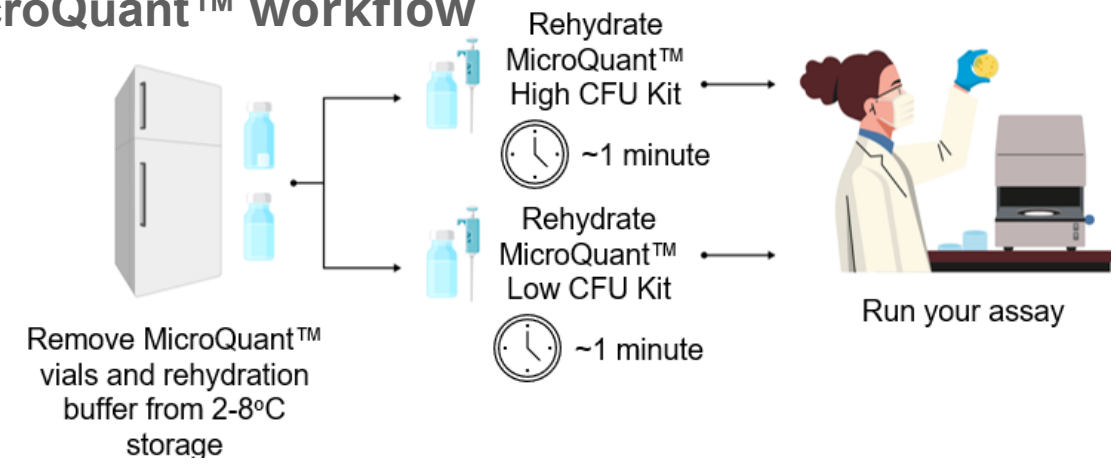
The traditional microbe culture workflow



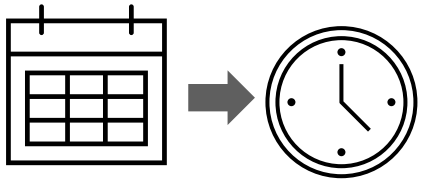
*Different species require varying incubation times

Meeting the challenge through cryobiology

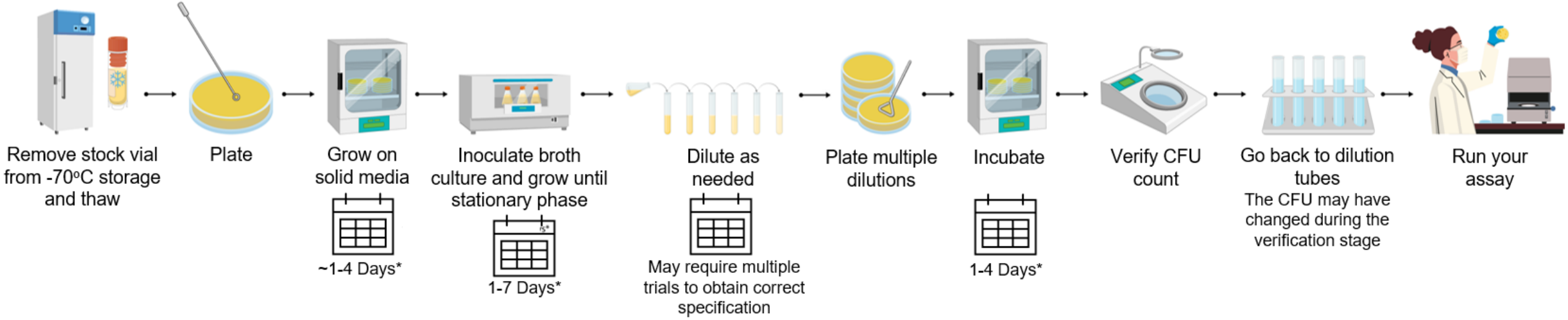
The MicroQuant™ workflow



Our innovative cryopreservation technology enables you to streamline your microbial QC workflow from days to minutes.



The traditional microbe culture workflow



*Different species require varying incubation times

MicroQuant™ by ATCC®

Precision in every pellet, trust in every test

A ready-to-use solution to help you streamline microbial QC testing

- Precisely quantitated in high-titer and low-titer pelleted formats
- Single-use format using an innovative, proprietary preservation technology
- Rapid, uniform rehydration in less than a minute
- Easy to store and ready to use anytime—no need to thaw
- Original ATCC materials manufactured under ISO 17034

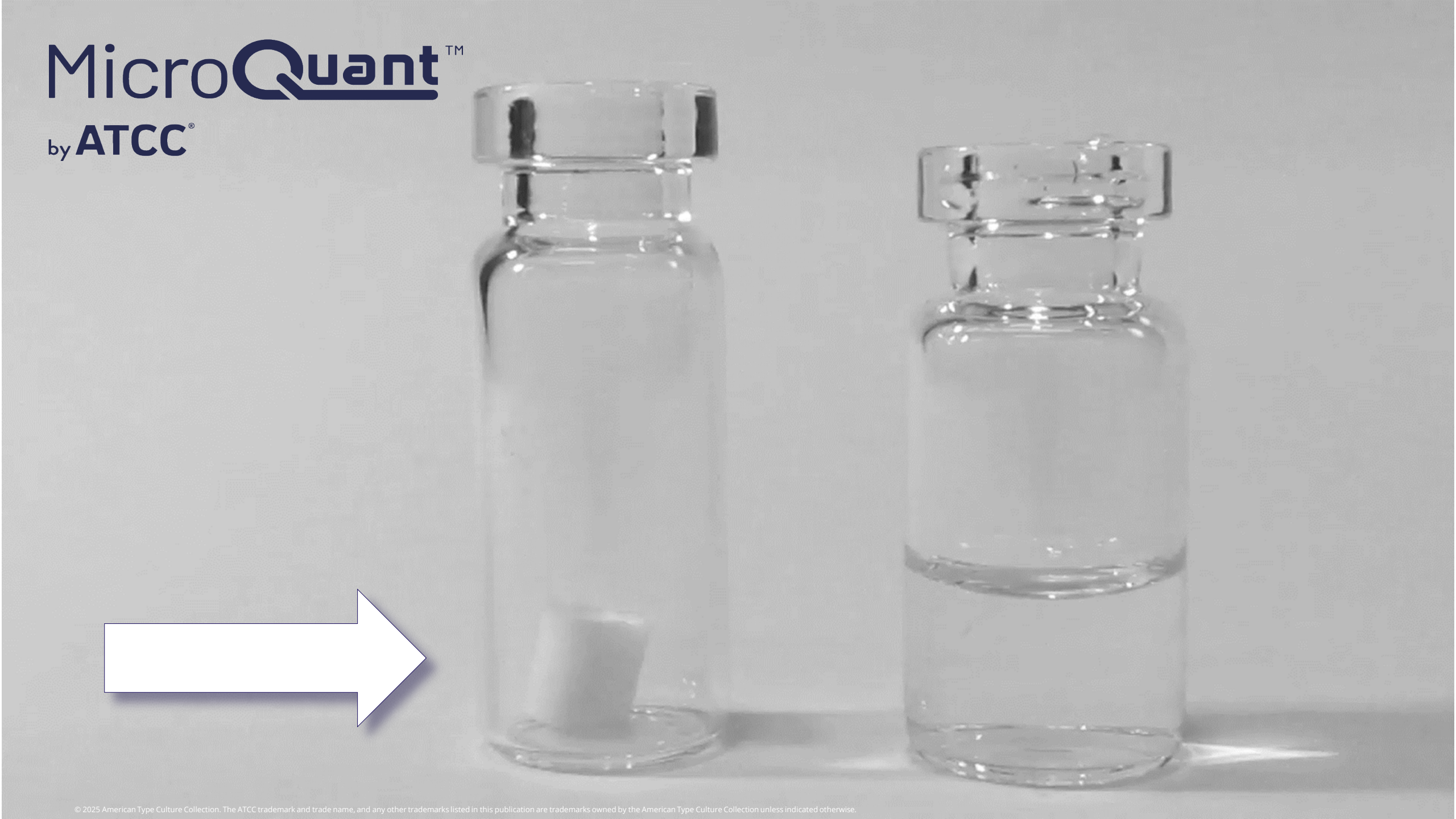
Precision backed by authentication

- **Phenotypic analysis** – Cell morphology, colony description, viability, and purity
- **Proteomic analysis** – MALDI-TOF MS
- **Functional testing** – Antimicrobial susceptibility testing, serotyping, virulence detection
- **Genotypic analysis** – Sequencing conserved regions of the genome and whole-genome sequencing
  - We have published the corresponding genomes for 5,500 ATCC microbes on our **ATCC® Genome Portal** (genomes.atcc.org)

Researchers look to ATCC for a wide range of authentication resources to safeguard reproducibility and meet requirements for funding, publication, and quality control.

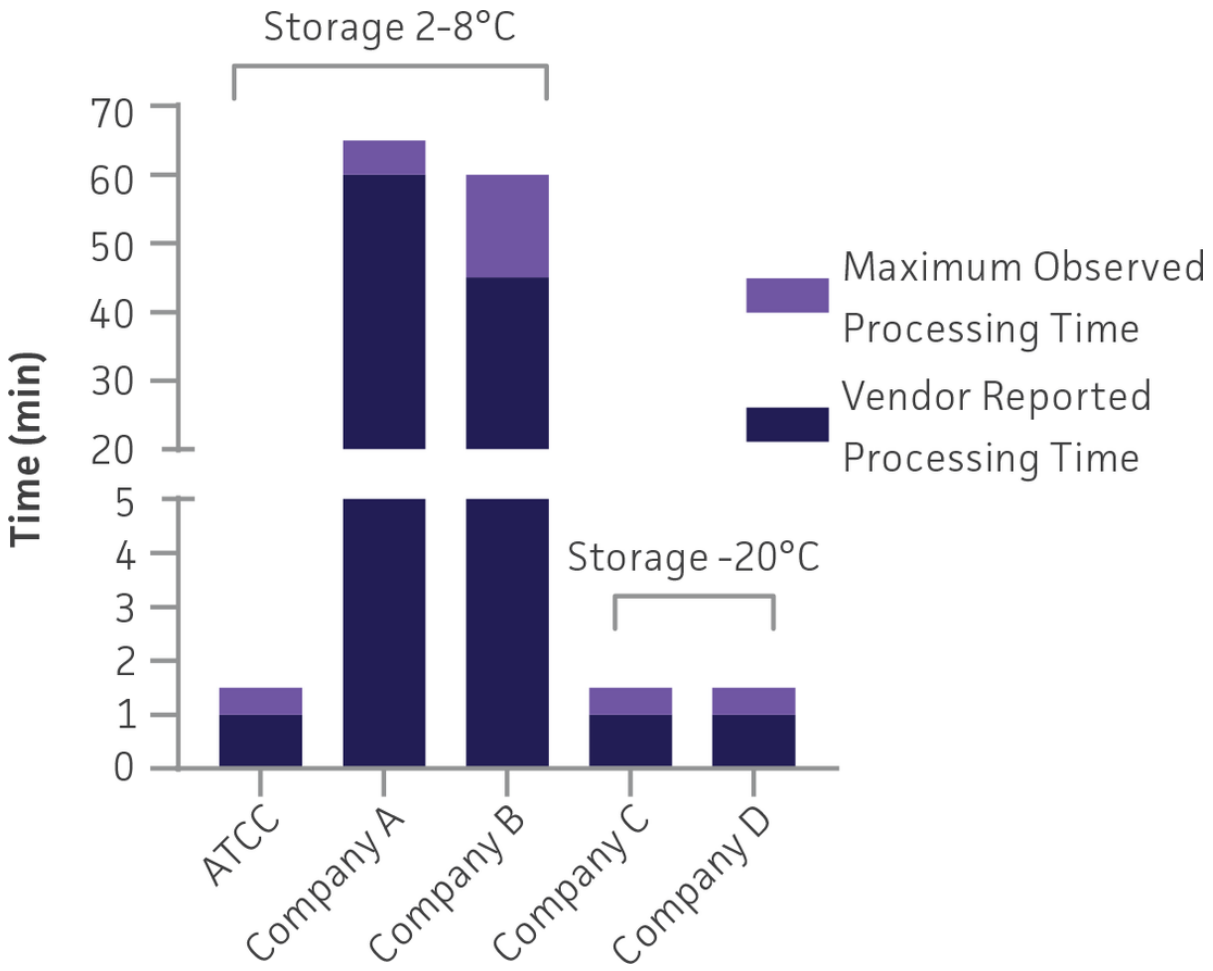
MicroQuant™

by ATCC®



Maximize your resources

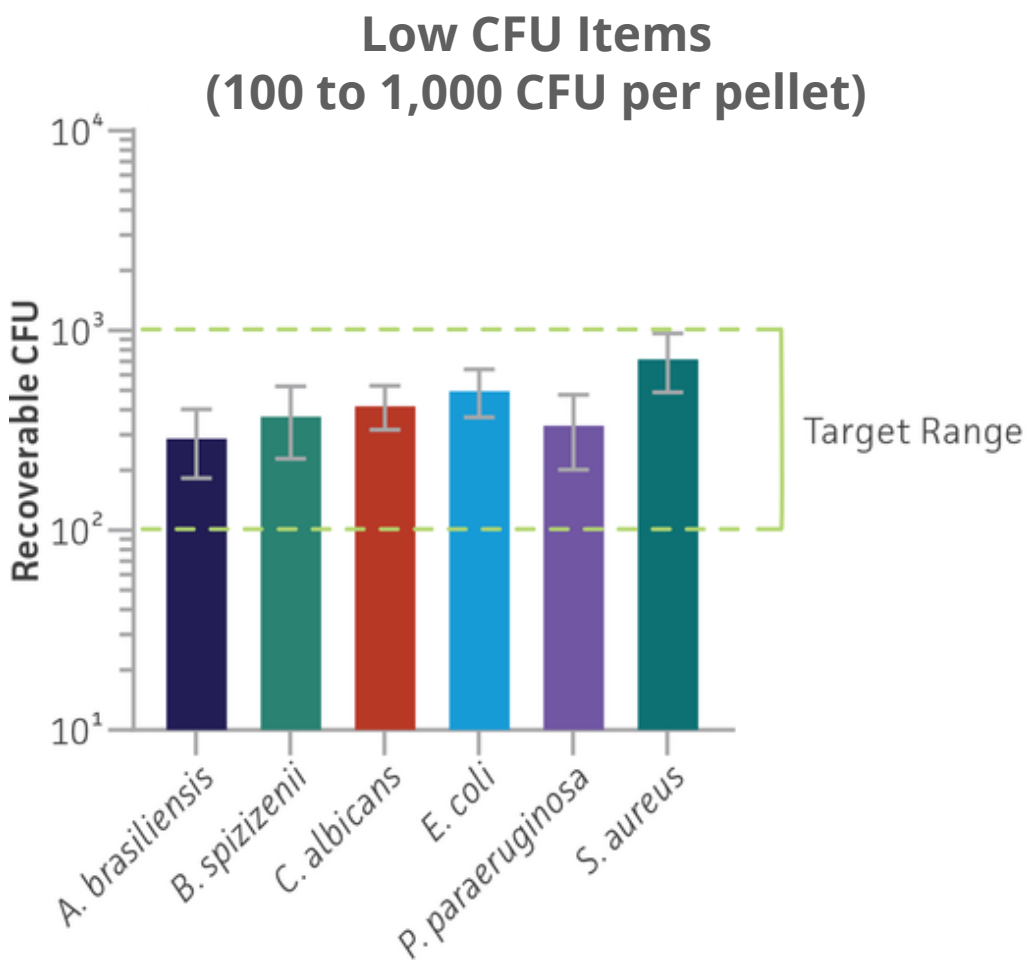
MicroQuant™ is stable at 2-8°C, making it convenient to store and ready to use anytime

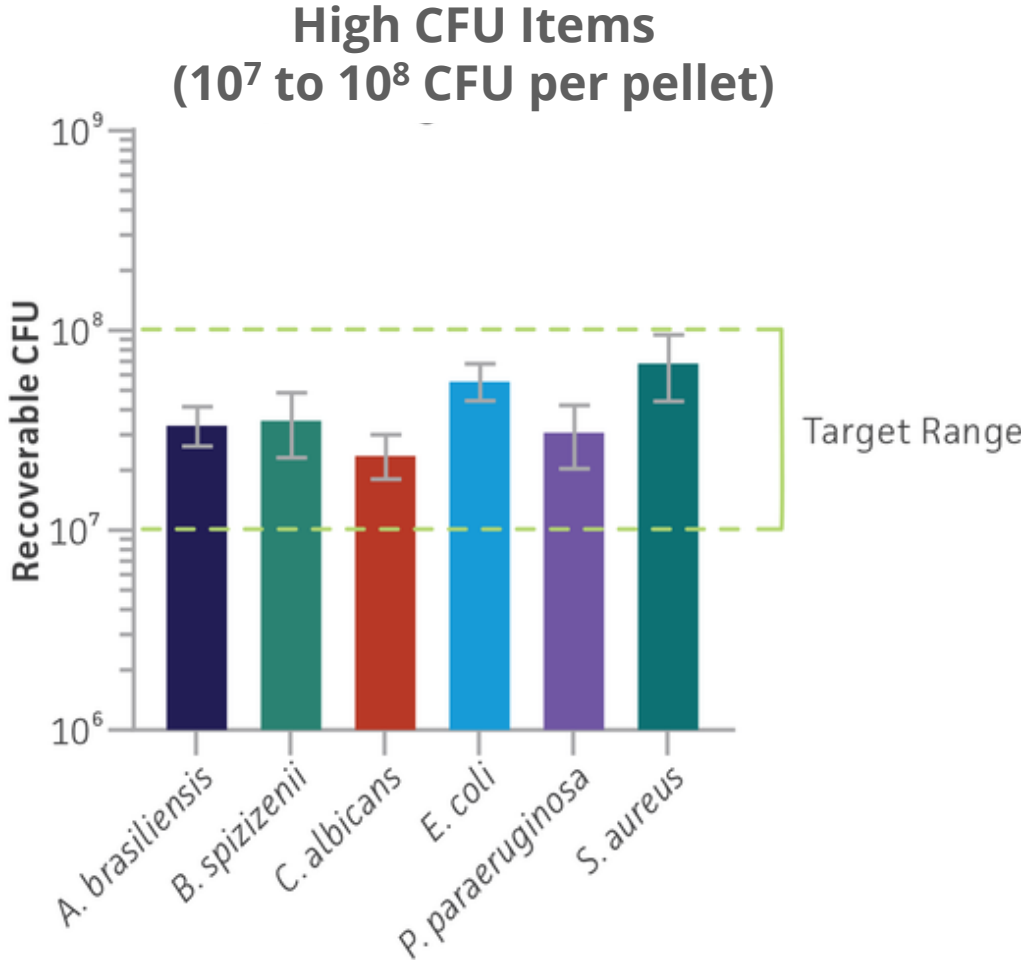


MicroQuant™ is stable up to 1 year at 2-8°C

Unlock flexibility with platform-agnostic solutions

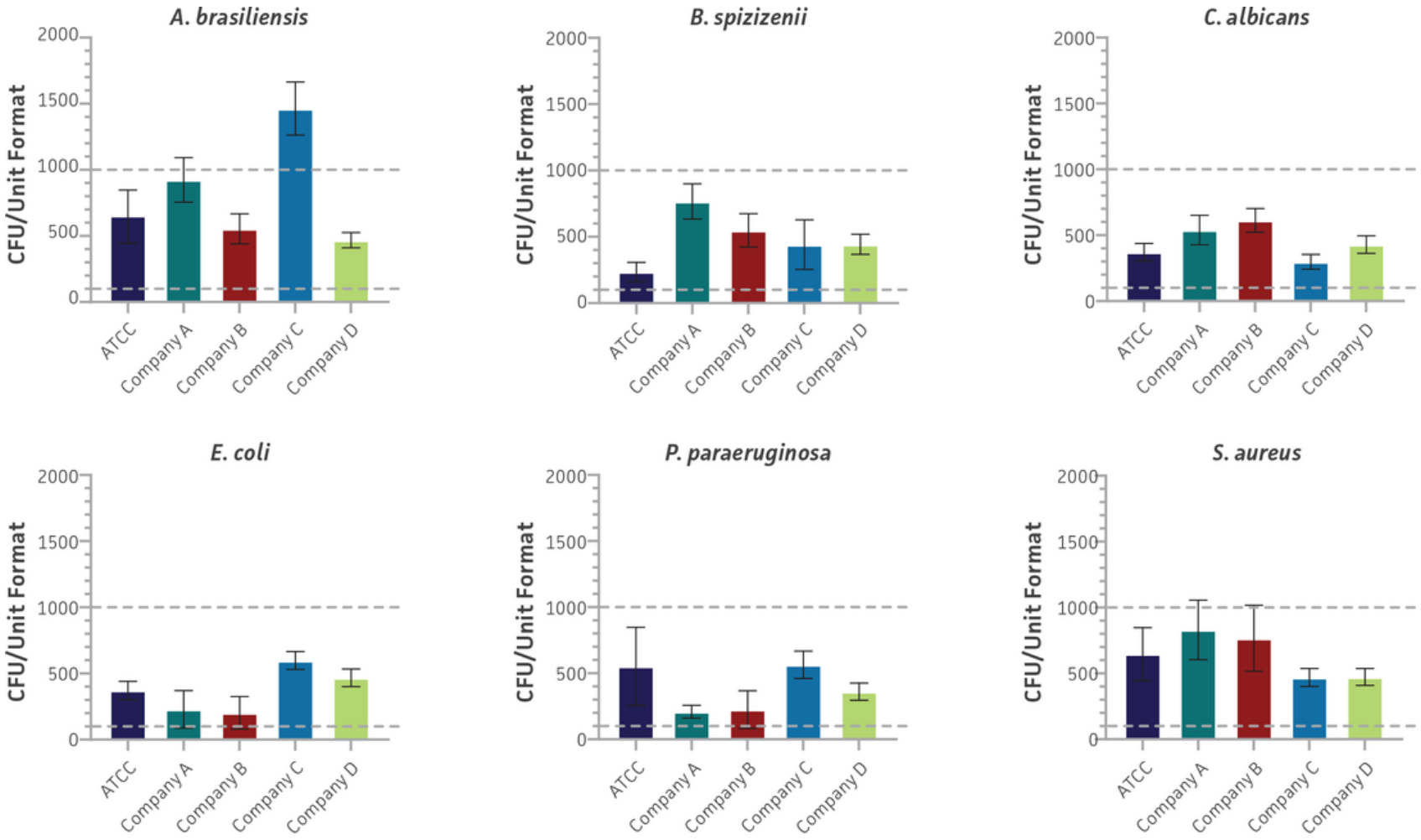
MicroQuant™ is provided as a single-use quantitated pellet that enables fast assay set up with minimal handling





Rely on consistent, precise quantitation

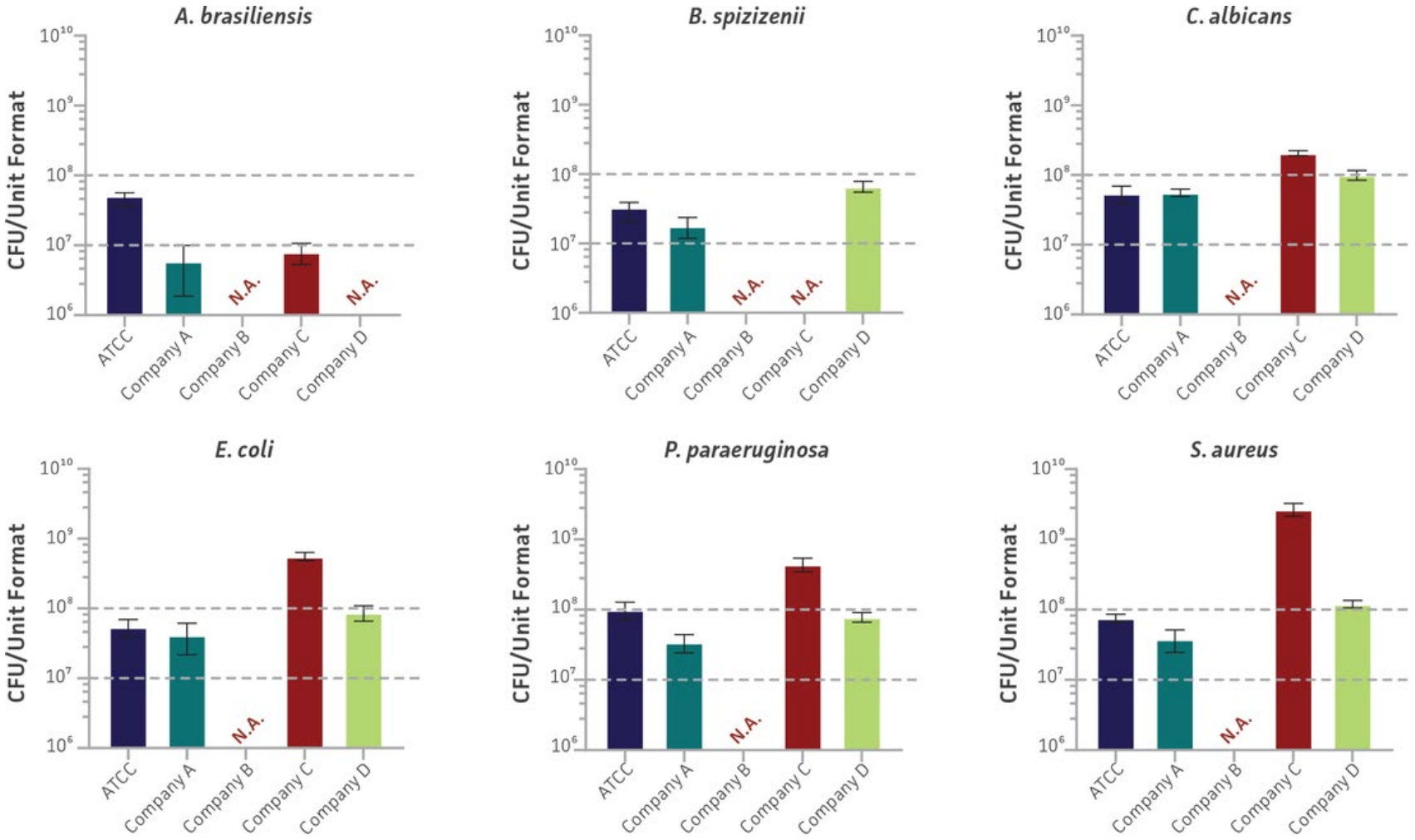
MicroQuant™ - Precise and accurate low CFU pellets for bioburden testing



"Low CFU" means 100 to 1,000 CFU/pellet

Rely on consistent, precise quantitation

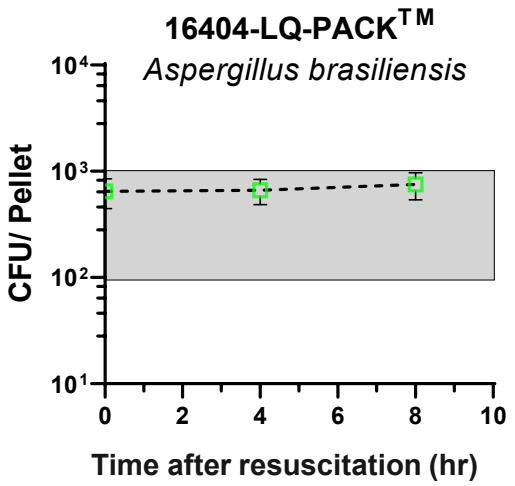
MicroQuant™ - Precise, high CFU pellets for testing under USP <51> guidelines

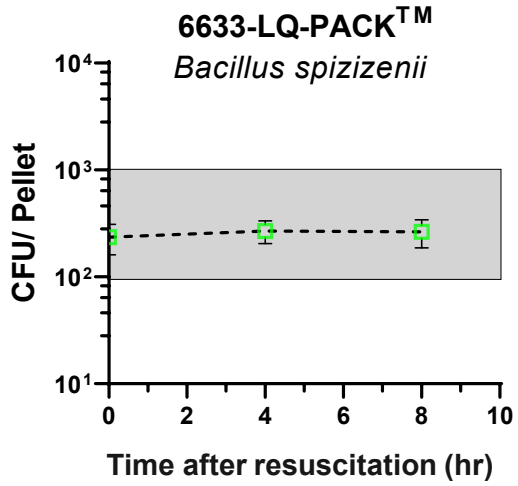


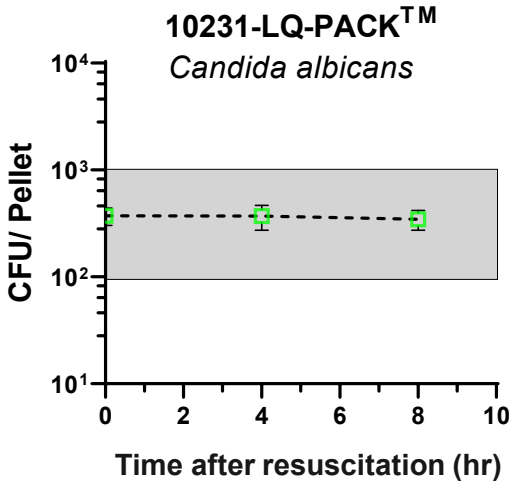
"High CFU" means 10^7 to 10^8 CFU/pellet

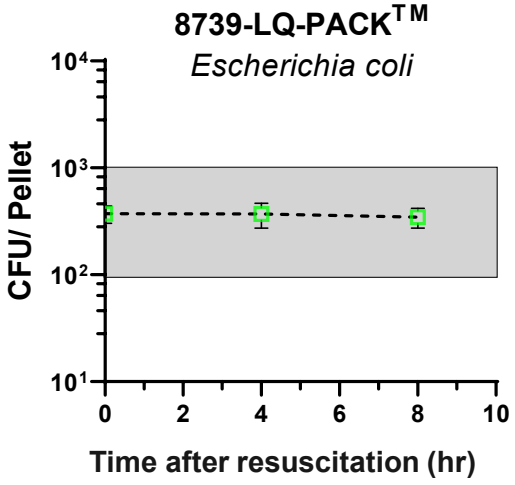
Short-term stability of MicroQuant™

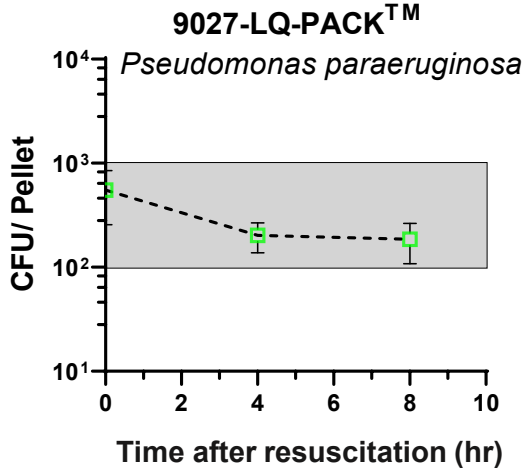
Low titer

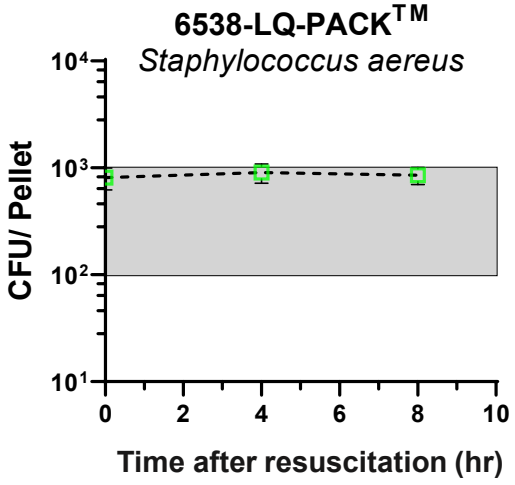






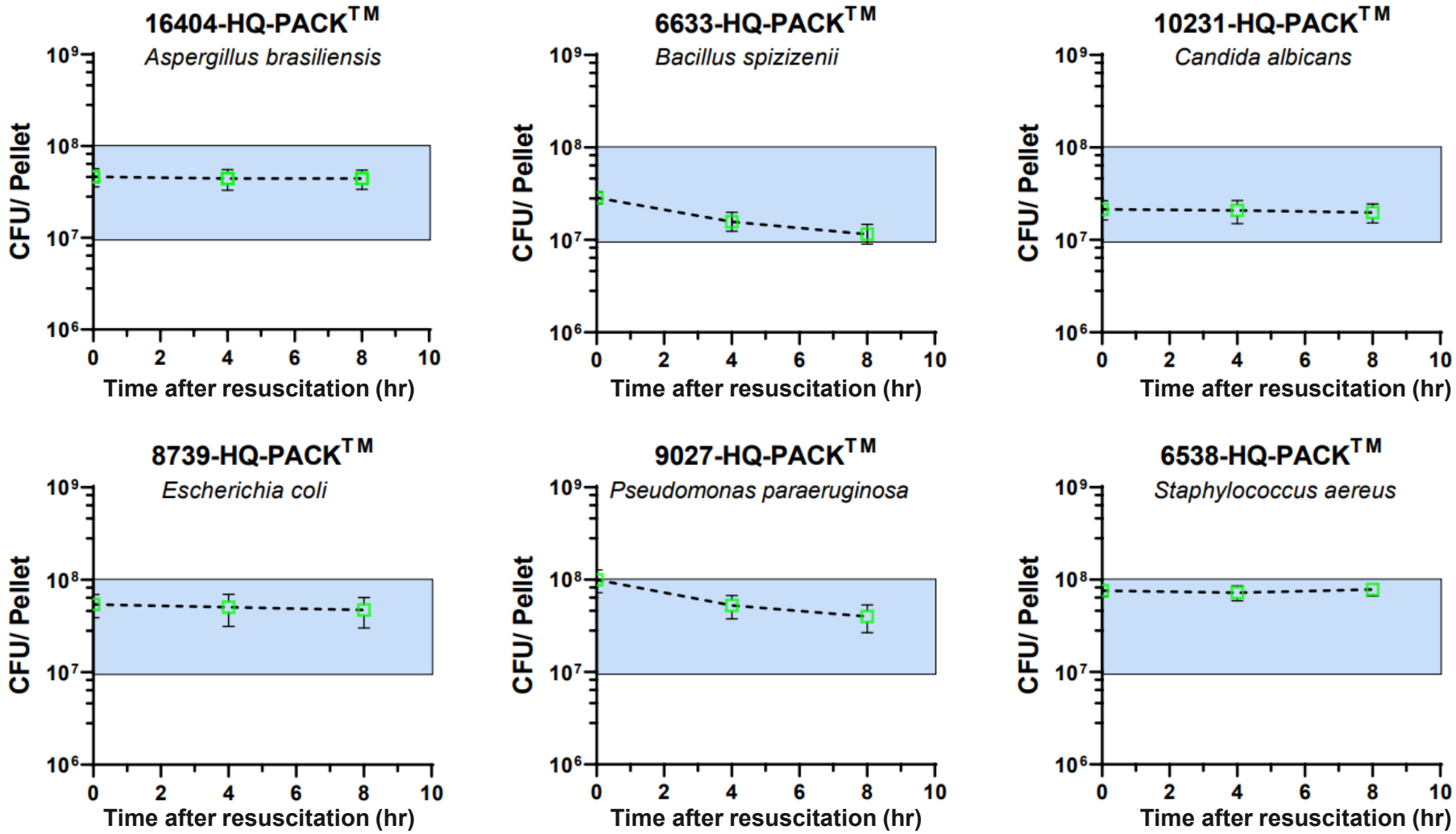






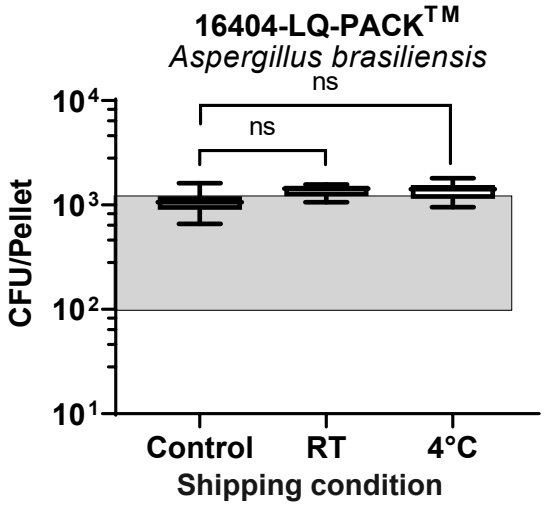
Short-term stability of MicroQuant™

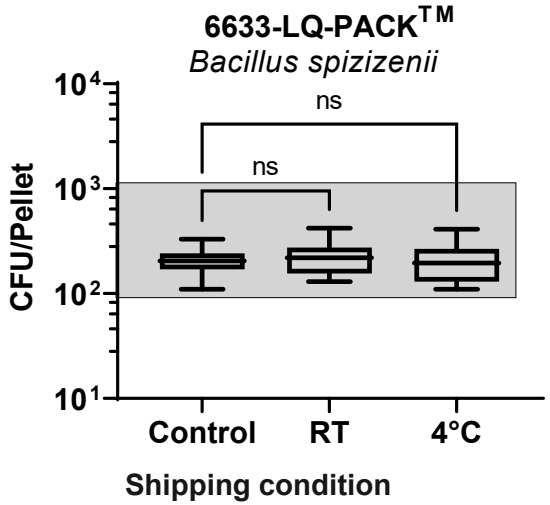
High titer

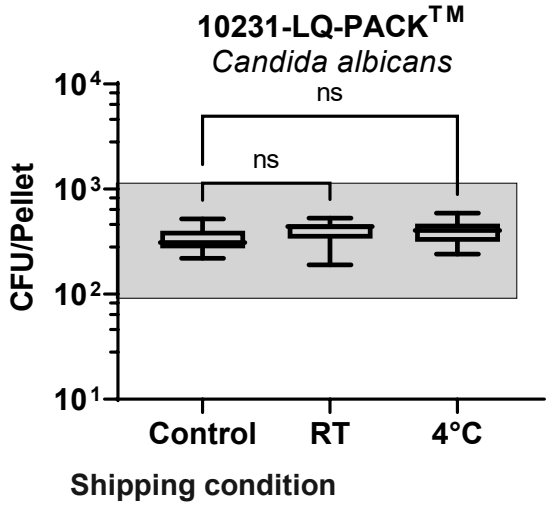


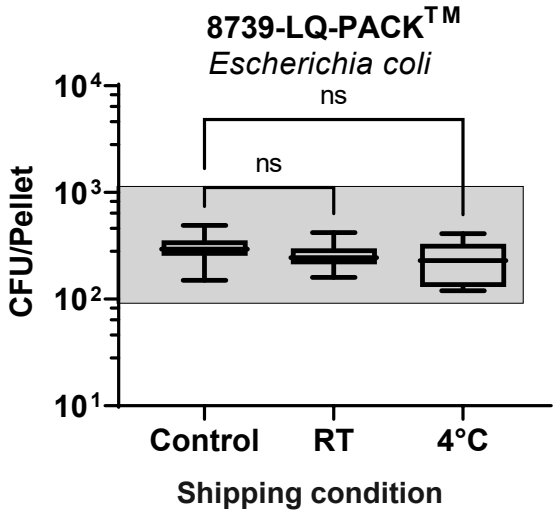
Transportation stability of MicroQuant™

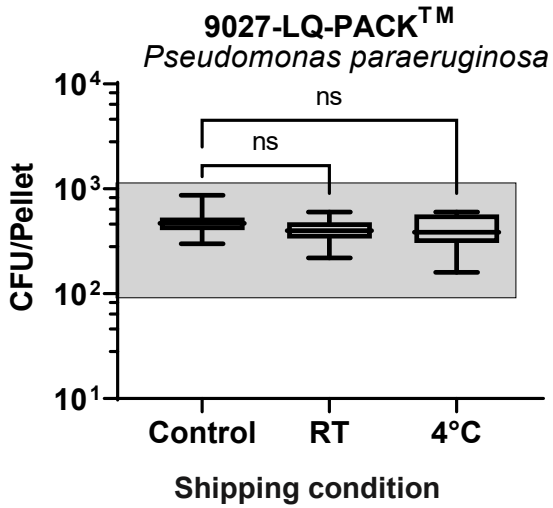
Low titer

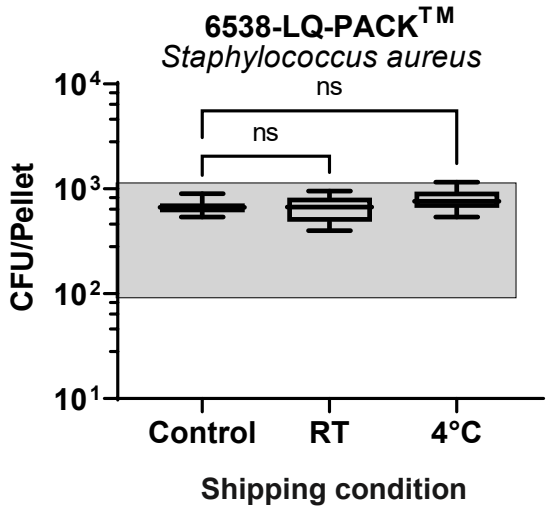






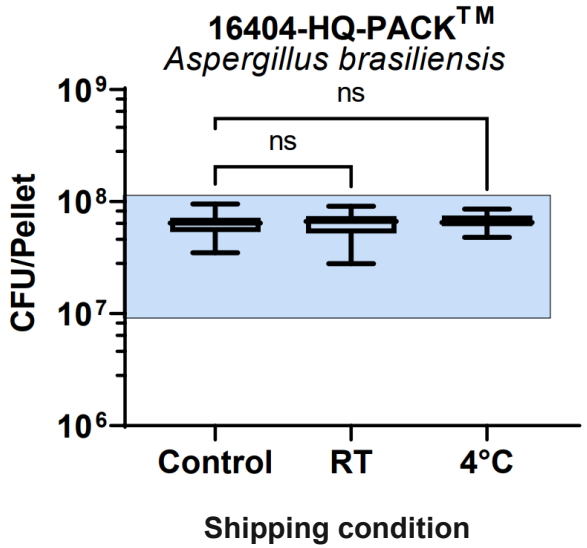


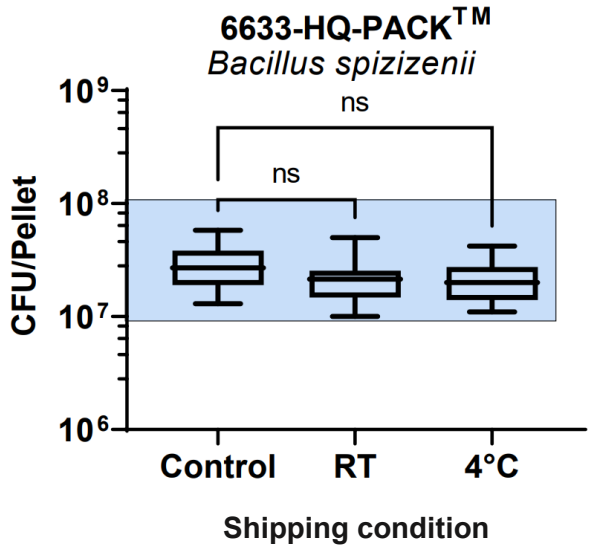


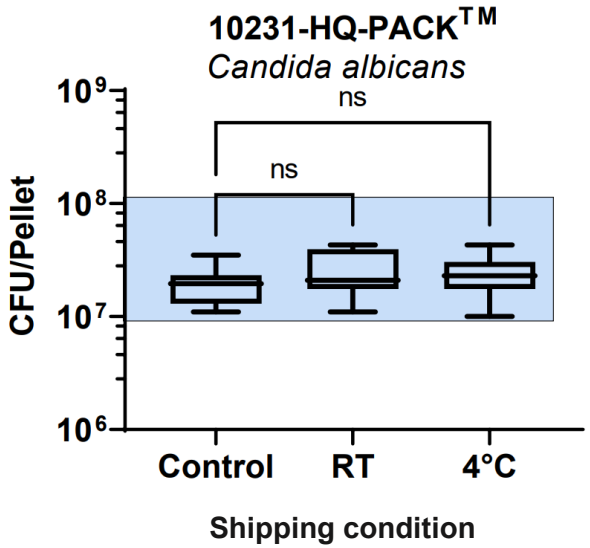


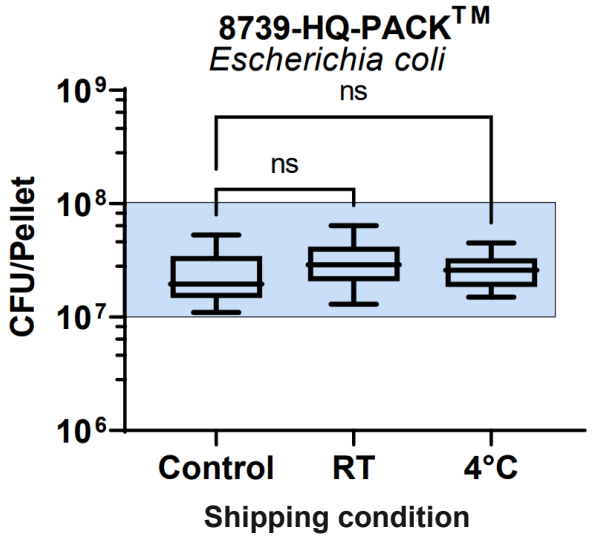
Transportation stability of MicroQuant™

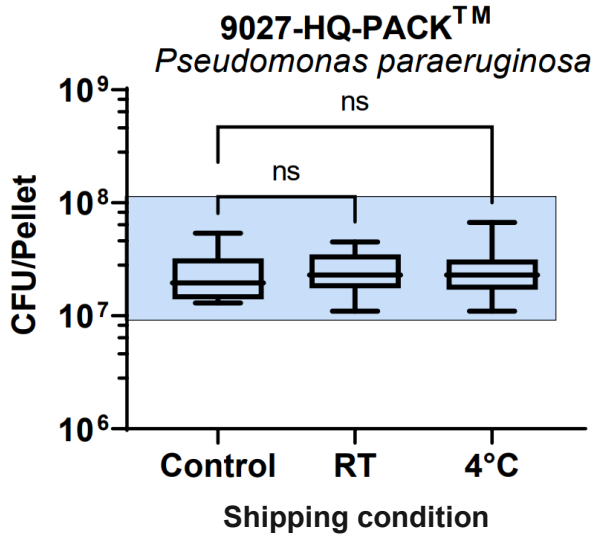
High titer

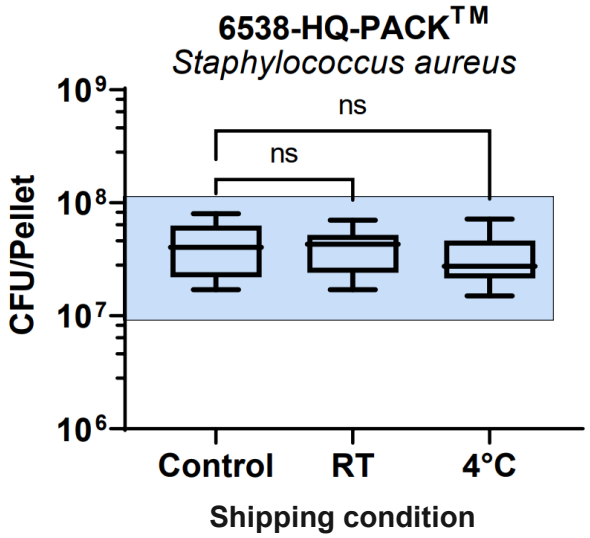












How MicroQuant™ compares to similar products

Features	MicroQuant™	Company A	Company B	Company C	Company D
Processing time ~1 minute	✓			✓	✓
2-8°C refrigeration storage	✓	✓	✓		
Manufactured under ISO 17034	✓	✓	✓	✓	✓
Includes all strains for USP <51> (High CFU format)	✓	✓*		✓*	✓*
Includes all strains for USP <61> (Low CFU format)	✓	✓	✓	✓	✓
Product kit includes rehydration buffer	✓	✓	✓	✓	
Sourced from ATCC	**Passage 0**	✓	✓		

*Some strains were not available for purchase at the time of testing

End-user benefits and feedback on using MicroQuant™

MicroQuant™ saves time and cost

Versus preparing internal controls

86%

of labor time is saved when using MicroQuant™ versus preparing internal controls manually

83%

cost reduction is achieved using MicroQuant™ versus using internally prepared controls

External end-user results for quantitation

MicroQuant™ is a top performer compared to other single-use controls

End-user verification of reported CFU/mL for single-use control per Instructions for Use

Single-use control	Strains used in high titer (USP <51>)			Strains used in low titer (USP <61>)		
	C. albicans	*S. aureus*	*E. coli*	*C. albicans*	*S. aureus*	*B. spizizenii*
MicroQuant™ by ATCC	✓	✓	✓	✓	✓	✓
Company A	✓	✓	✓	✓	✓	✓
Company B	✓	✓	✓	X	X	X
Company C	Not tested	Not tested	Not tested	✓	Not tested	✓
Company D	✓	X	X	✓	✓	X

MicroQuant™ had the "most accurate CFU results"

✓= met criteria for product's instruction of use
X = didn't meet criteria for product's instruction of use

External end-user results for ease of dissolution

MicroQuant™ is the top performer compared to other single-use controls

Ease of dissolution scored on a 1 to 5 rating

Single-use control	*C. albicans/S. aureus/E.coli*
MicroQuant™ by ATCC	★★★★★
Company A	★★☆☆☆
Company B	★★★★½
Company C	★★☆☆☆
Company D	★½☆☆☆

MicroQuant™ had the "fastest rehydration"

Score: 1 to 5 system
5: Fully soluble within seconds at room temperature.
4: Dissolves quickly (<1 minute) with minimal effort.
3: Dissolves with moderate effort (10 minutes, stirring).
2: Requires extended processing or specific steps to dissolve.
1: Insoluble or requires elevated temperatures/incubation.

External end-user results for ease of preparation

MicroQuant™ is the top performer compared to other single-use controls

Ease of preparation scored on a 1 to 5 rating

Single-use control	Observation rating	Justification
MicroQuant™ by ATCC	★★★★★	Simple and intuitive preparation. No clumping or precipitation. Buffer included.
Company A	★★★☆☆	Moderate preparation with **1 hour of warming**. **Additional buffer needed** for some formats.
Company B	★★★☆☆	Simple process but **physical risks** noted (pellet may miss vial, tipping risk).
Company C	★★★★☆	Simple preparation. No consumables needed. **Incubator required.**
Company D	★★★★☆	Simple preparation. No clumping or precipitation noted. **Additional buffer needed** for high CFU quantitation.

MicroQuant™ had the most "intuitive prep"

What MicroQuant™ products are available?

Explore the MicroQuant™ portfolio

ATCC® No.	Description
10231-LQ-PACK™	MicroQuant™ *Candida albicans*, low CFU
10231-HQ-PACK™	MicroQuant™ *Candida albicans*, high CFU
9027-LQ-PACK™	MicroQuant™ *Pseudomonas paraeruginosa*, low CFU
9027-HQ-PACK™	MicroQuant™ *Pseudomonas paraeruginosa*, high CFU
6538-LQ-PACK™	MicroQuant™ *Staphylococcus aureus* subsp. *aureus*, low CFU
6538-HQ-PACK™	MicroQuant™ *Staphylococcus aureus* subsp. *aureus*, high CFU
16404-LQ-PACK™	MicroQuant™ *Aspergillus brasiliensis*, low CFU
16404-HQ-PACK™	MicroQuant™ *Aspergillus brasiliensis*, high CFU
8739-LQ-PACK™	MicroQuant™ *Escherichia coli*, low CFU
8739-HQ-PACK™	MicroQuant™ *Escherichia coli*, high CFU
6633-LQ-PACK™	MicroQuant™ *Bacillus spizizenii*, low CFU
6633-HQ-PACK™	MicroQuant™ *Bacillus spizizenii*, high CFU

Low CFU = 100 to 1,000 CFU/pellet

High CFU = 10^7 to 10^8 CFU/pellet

Explore the MicroQuant™ portfolio

ATCC® No.	Product Name	Description
MQ-51™	MicroQuant™ Antimicrobial Effectiveness Panel	A panel comprising the five microbial challenge organisms cited in USP <51>. Each component is provided as a pack containing 5 vials of cryopreserved pellets (10^7 to 10^8 CFU per pellet) and 5 vials of rehydration buffer.
MQ-61™	MicroQuant™ Microbial Examination of Nonsterile Products Panel	A panel comprising the five microbial challenge organisms cited in USP <61>. Each component is provided as a pack containing 5 vials of cryopreserved pellets (100 to 1,000 CFU per pellet, supporting 10 assays per pellet) and 5 vials of rehydration buffer.

MicroQuant™ applications

Control strains supporting USP general chapter requirements

High-quantitation (HQ)
Low-quantitation (LQ)

	Species	USP <51>	USP <61>	USP <60>	USP <62>	USP <71>	USP <72>
Available Now	*Aspergillus brasiliensis* WLRI 034(120)	HQ	LQ			LQ	LQ
	Bacillus spizizenii NRS 231		LQ			LQ	LQ
	Candida albicans 3147	HQ	LQ		LQ	LQ	LQ
	Escherichia coli Crooks	HQ			LQ		
	Pseudomonas paraeruginosa R. Hugh 813	HQ	LQ	LQ	LQ	LQ	LQ
	Staphylococcus aureus FDA 209	HQ	LQ	LQ	LQ	LQ	LQ
Available in July	*Burkholderia cepacia* UCB 717			LQ			
	Burkholderia cenocepacia LMG 16656			LQ			
	Burkholderia multivorans LMG 13010			LQ			
Available by the end of 2025	*Clostridium sporogenes* L.S. McClung 2006				LQ	LQ	LQ
	Clostridium sporogenes SR 5				LQ	LQ	LQ
	Salmonella enterica CDC 6516-60				LQ		

Summary

- ATCC® MicroQuant™ is an innovative product suite designed to streamline microbial quality control testing.
- Precisely quantitated
  - High-titer (HQ; 10^7 to 10^8 CFU per pellet)
  - Low-titer (LQ; 100 to 1,000 CFU per pellet)
- Single-use format for fast assay setup and minimal handling.
- Developed from traceable, original source materials provided at **Passage zero**.
- Immediate rehydration at room temperature with an 8-hour usability window.
- Stable storage at 2-8°C.
- Manufactured under an ISO 17034–accredited process.

ATCC®

CREDIBLE LEADS TO INCREDIBLE

Thank You